

INCENTIVES VS. KNOWLEDGE:  
REPLY TO CAPLAN

*ABSTRACT: In the 1920s, Ludwig von Mises argued correctly that the problem of making economic calculations without market-generated prices would be an insuperable difficulty for socialist systems of production. Bryan Caplan is right to argue that there is no theoretical way to infer the magnitude of this difficulty, but he is wrong to insist that the history of poor economic performance displayed by real-world socialism should be attributed not to the "socialist calculation problem," but to inadequate work incentives. A state that had solved the calculation problem would have well within its means the solution to the incentives problem, too.*

In a recent issue of this journal, Bryan Caplan (2004) accepts Ludwig von Mises's argument that state ownership and direction of the means of production make economic calculation impossible. But Caplan rejects Mises's contention that this is the fundamental problem of socialism (defined as central economic planning), either in theory or in practice. Caplan instead pins the blame for the failures of real-world communism on inadequate incentives to work.

Peter J. Boettke and Peter T. Leeson (2005) have now responded to Caplan's critique of Mises's views on socialism. Their paper falls short

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Rodolfo A. Gonzalez and Edward Stringham, Department of Economics, San Jose State University, San Jose, CA 95192, [edward.stringham@sjsu.edu](mailto:edward.stringham@sjsu.edu), thank Roger Nils Folsom for editing and many useful suggestions; Luis Locay for information on socialist Cuba; and Rudolph Anthony Gonzalez for information on the Soviet military. They especially thank the editor for helping improve the paper significantly.

of an adequate response. They trivialize Mises's position on the viability of socialism as a mere denial that socialism will, by making better use of the means of production, give birth to a post-scarcity society of harmony. To advance this novel and peculiar interpretation of Mises's dire warnings about the consequences of a socialist world, they attribute to Mises a definition of "socialism" that contradicts his own very explicit writings.

However, Boettke and Leeson's failed defense of Mises does not make Caplan right. Contra Caplan, we argue that the fundamental problem with socialism is the impossibility of economic calculation in the absence of market prices—not the incentive problem. We do agree with Caplan that Mises's dire prediction that without economic calculation, there would be chaotic production, widespread impoverishment, and retrogression toward less complex production processes does not strictly follow from the Misesian logic of action. But although not a logical necessity, Mises's empirical predictions are reasonable common-sense conjectures about the likely consequences of doing away with economic calculation.

### *The Irrelevance of Boettke and Leeson*

In Mises's view, according to Caplan, the essence of socialism is that one agency decides how to use the means of production. In contrast, Boettke and Leeson argue that although socialism is characterized by state allocation of the means of production, in Mises's view socialism also entails a particular set of objectives, including the utopian aspiration to transcend the condition of scarcity. Their answer to Caplan then proceeds as follows:

1. To realize the objective of transcending scarcity, socialism must be far more productive than capitalism.
2. Since the absence of market prices for the means of production renders economic calculation impossible, a socialist system of production is less efficient than capitalism.
3. Therefore, just as Mises claimed, "socialism" is "impossible."

This is an ingenious argument. But it fails to address Caplan's core position, that the economic calculation problem does not merit any special recognition within the set of antisocialist arguments. Moreover,

Boettke and Leeson fail to offer any textual evidence for their unique interpretation of what Mises meant by socialism, and by its “impossibility.”

Contrary to the view that his definition of socialism includes a set of utopian objectives, Mises wrote in *Socialism* ([1922] 1981, 211) that

the essence of Socialism is this: All the means of production are in the exclusive control of the organized community. This and this alone is Socialism. All other definitions are misleading.

Twenty-seven years later, in *Human Action*, Mises ([1949] 1966, 695–96) kept to the same—structural—definition:

The essential mark of socialism is that one will alone acts. It is immaterial whose will it is. . . . The main thing is that the employment of all factors of production is directed by one agency only. . . . Organization and planned order are substituted for the “anarchy” of production and for various people’s initiative.

The essence of socialism is the entire elimination of the market and of catallactic competition. The socialist system is a system without a market and market prices for the factors of production and without competition; it means the unrestricted centralization and unification of the conduct of all affairs in the hands of one authority. (Ibid., 706.)

Nowhere do we find Mises adding that socialism must deliver greater material production than capitalism to count as the “socialism” that he thinks is, in light of the calculation problem, “impossible.”

There is no doubt that in the past many believed that a socialist system could organize the means of production better than capitalism. And it is conceivable that in his earlier writings on socialism, Mises was directing his critique to those whose socialism was grounded on that belief.<sup>1</sup> His later writings on socialism, however, leave no doubt that he had in mind, by “the impossibility of socialism,” something far stronger than Boettke and Leeson think. He wrote in *Human Action*:

If no other objection could be raised to the socialist plans than that socialism will lower the standard of living of all or at least the immense majority, it would be impossible for praxeology to pronounce a final judgment. Men would have to decide the issue between capitalism and socialism on the grounds of judgments of value and judgments of relevance. . . . However, the true state of affairs is entirely dif-

ferent. . . . Socialism is not a realizable system of society's economic organization because it lacks any method of economic calculation. (Mises [1949] 1966, 679.)

Socialism cannot be realized because it is beyond human power to establish it as a social system. The choice is between capitalism and chaos. . . . A society that chooses between capitalism and socialism does not choose between two social systems.; it chooses between social cooperation and the disintegration of society. (Ibid., 680.)

We grant that if one defines “socialism” in the way Boettke and Leeson do, then socialism is “impossible” in the sense that without economic calculation, socialism would be less productive than capitalism. But Caplan does not dispute whether the socialist calculation problem would reduce the productivity of socialism compared to that of capitalism. His question is: How much would it—and *did* it—reduce productivity, relative to the incentives problem? Since Boettke and Leeson's paper is intended as a defense of Mises's views against Caplan, we think that if Caplan is to be disputed, it must be on other grounds.

### *Cognitive vs. Motivational Objections to Socialism*

In contrast to incentive-based critiques of socialism such as the one now defended by Caplan, the economic calculation argument applies with equal force to egalitarian and non-egalitarian forms of socialism; it holds equally for benevolent as for despotic political regimes; and it cannot be dismissed by postulating a future “socialist man” endowed with a high degree of altruism. A non-egalitarian socialist regime could offer the same incentives through differential labor compensation, and through threats of demotion and dismissal, as are offered by capitalist firms. And a despotic socialist regime could *add* to these incentives the threats of imprisonment and death.

The extent to which society can mold individuals to pursue collective objectives is unknown, and it is an issue that economists are not particularly competent to address. But it is logically possible that a society of altruists could be created in which incentives—by which Caplan means self-interest—wouldn't matter to begin with. As Mises ([1922] 1981, 407) put it, however,

the impracticability of Socialism is the result of intellectual, not moral, incapacity. Even angels, if they were endowed only with human reason, could not form a socialistic community. If a socialist community were capable of economic calculation, it could be set up without any change in men's moral character.

Caplan quotes those very sentences in the concluding section of his article, but we think that he does not understand Mises's point. If the state had all the necessary knowledge for economic calculation,<sup>2</sup> then the incentive problem reduces to that of a master persuading a servant to obey. And what a formidable master this state could be. It would be the sole employer and the sole distributor of goods. Moreover, by virtue of having somehow (*ex hypothesi*) solved the calculation problem, it would have the knowledge needed to extract economic gains from social cooperation through refined wage and price discrimination (Crampton and Farrant 2006, 8). Therefore, this state could be highly egalitarian, and yet provide enough marginal material rewards to get selfish people to do the necessary work. Thus, incentives wouldn't be a problem to begin with if the state had the means to solve the calculation problem.

Mises assumed away any incentives problem to drive home the point that his argument was cognitive, not emotive. (That is, it did not descend from the long line of thinkers concerned to show that Utopia is impossible because people are too selfish.) If we do the opposite, assuming away cognitive problems that would interfere with the state's ability to calculate, then we have also assumed away any motivational problems, no matter how selfish or selfless people are. The socialist planner could rationally direct production, and people would need only to follow the agency's orders—whether because they resemble angels, or because they want to earn money, or because they are afraid of punishment.

Arguments grounded on material incentives provide solid objections against price controls and various other interventionist schemes in a market economy of selfish people. This does not mean that they provide equally solid objections against a command economy of selfish people. Consider the well-known problem of "who collects the garbage" if everyone is paid the same amount. Unless people are angels, people would avoid unpleasant occupations if they could make the same amount doing more pleasing work. But even in a socialist society of non-angels, the state, the sole employer, could simply refuse to trans-

fer unhappy garbage men to other occupations. The calculation argument, in contrast, shows that central planners would face the fundamental problem of not knowing whether they need more garbage collectors or a more capital-intensive garbage-collection system. Merely introducing into this scenario different wages as incentives to enter different occupations will not solve the problem.<sup>3</sup>

Socialist planners would not necessarily face an incentives problem. Ignorance of how to allocate resources, however, would be inescapable.

### *Magnitude Issues and Economic Theory*

Mises's cognitive argument (like all arguments from pure economic theory) is silent about the magnitude of its consequences. Without the ability to calculate, the socialist planner would face a difficulty, but pure theory cannot say how severe it would be.

How bad would things get under a production system operating without calculation? The theorist per se cannot answer the question, but with the assistance of experience, the theorist can make rough conjectures about the size of the gains or losses generated by alternative economic institutions and policies. This is what Mises did when he claimed that socialism was incompatible with "civilization."

Mises's claim about the incompatibility of socialism and civilization defines socialism as a central-command production system that is isolated from an external capitalist environment: a system in which decisions about how to use the means of production are made by one agency, unassisted by knowledge coming from an external capitalist world.<sup>4</sup> Mises did not deny that a socialist community could function within a broader capitalist environment. In fact, he affirmed that a large quasiosocialist area could coexist with capitalism for an indefinite period (Mises [1949] 1966, 860). But he maintained that "socialism," in the sense of a central-command system of production that was not parasitic upon price information drawn from an outside capitalist world, could not long sustain the advanced mode of production that makes possible modern civilization and its large population. To Mises, a socialist world is a road to modern society's eventual disintegration, and is therefore no more a practicable social system than cyanide is a viable beverage to a person not intending suicide.

There are ample textual grounds for Caplan's colorful statement that Mises raises the specter not of "a lower standard of living, but [of] Ar-

maggeddon.” How could Mises make such claims with a priori certainty? He couldn’t, and he didn’t think that he could. Mises’s conjecture about the catastrophic consequences of the absence of economic calculation cannot be logically derived from economic theory alone. We must add to the economic calculation argument the proposition that economic calculation is, in fact, necessary to generate or sustain the material foundations of modern society. This proposition is open to an empirically grounded challenge; it is a falsifiable hypothesis.

Caplan is mistaken in perceiving an inconsistency between Mises’s methodological position on economic laws and his claims about the incompatibility of socialism with advanced civilization. Mises’s methodological argument is that economic laws cannot be quantitative because there are no *constant quantitative relationships* in human action. From this, however, it does not follow that it is impermissible for economists to make *general* magnitude statements about the *likely* consequences of *drastic* changes in economic institutions or policies.

Suppose we are asked what the consequence would be for the contemporary U.S. economy of successfully imposing a real minimum hourly wage of \$500. All that economic theory tells us a priori is that in this scenario, competitive, profit-seeking employers will (*ceteris paribus* and discarding esoteric conditions) hire some smaller quantity of labor time; but we have no purely theory-derived idea of *how much* smaller. But drawing on our experience, it seems that few people produce an hourly output valued above \$500, so we can assert with very high confidence that the consequence of such a minimum wage would—in the present labor market—be an economic catastrophe that would make the Great Depression seem Lilliputian.

Estimates of the likely magnitude of institutional or policy changes, however—no matter how general and conjectural—are still empirical, and therefore raise the question of the relationship between theory and reality.

In the case of Mises’s conjecture about the incompatibility of socialism with advanced civilization, we see three such questions. The first pertains to the complexity of economic production: How complicated must the set of possible production alternatives be, before the means of production can no longer be used with approximate effectiveness, without assistance from price-based economic calculation? The second question pertains to the degree of centralization: How centralized must the economic system be, before we treat it as equivalent to Mises’s ideal type of purely centralized economic planning—where only one will

chooses between alternative production methods? Our third question pertains to the isolation of the system: How great must the relative economic size of the socialist system be, before it is unable to “borrow” prices from the capitalist world enough to offset the otherwise-catastrophic consequences of its own lack of market prices?

### *The Magnitude of Complexity*

Mises addresses the complexity question to some extent. He allows that in a very simple production scenario, there is no economic calculation problem. A Robinson Crusoe can perceive clearly the relationship between the simple production choices open to him and their outcomes. Mises refers to this direct understanding of consequences as “calculation in kind.”

Contrary to Caplan, the small number of Crusoe-type individuals in the economy (or on the island) is not (by itself) what makes calculation in kind possible. Their numbers can increase, with no change in the mode of production, until diminishing returns prevent further population expansion. And it is not the length of time required to produce a good that makes Crusoe’s world different from ours. A lengthy process of production is not sufficient to diminish the ability to calculate in kind.<sup>5</sup> Nor is the ability to calculate in kind jeopardized by a task that requires several steps. Instead, the reason that higher-order or “intermediate” capital goods add to the complexity of an economy is that they have alternative uses.

The impediment to socialist calculation in kind on which Mises (1966, ch. 11) focuses is the multiplicity of ways in which means of production can be combined (in an advanced society) to produce various outputs. Especially with the specialization of labor characteristic of modern economies, the knowledge of how best to employ multiply usable means of production is widely dispersed (Hayek 1945; Read 1958). Calculation in kind thus faces Hayek’s problem of centralizing dispersed information; and Mises’s problem of how, once centralized, this information is to be understood in a way comparable to Crusoe’s direct understanding of the outcomes of his choice of production activities.

Mises’s insight, that the primary trouble facing a centralized command system arises from the complexity of the mode of production, provides the foundation for the conjecture that the more developed an



economy, the greater the relative inefficiency of socialism (Rothbard 1962, 548). This conjecture is contrary to the widespread idea that the more complex the society, the greater the need for central control.

### *The Magnitude of Centralization*

The reality of real-world “socialist” systems was, of course, quite different from Mises’s definition of socialism, where one agency decides and everyone else follows its orders. The central “planning” agencies of actual socialist societies have played a far more modest role. These agencies were used mainly to coordinate multiple decision makers’ production intentions with the supplies of inputs they thought they needed to actualize their intentions. Although such coordination is necessary, it is far from sufficient to properly use the means of production. And real-world central planners usually performed even this limited task very badly. Delivery schedules were poorly met. When inputs did arrive, they often didn’t match the required quantity and quality. It was quite normal for socialist plants to operate for weeks at a snail’s pace while managers scrambled for inputs, and then switch to a frantic “storming” pace once a new shipment arrived. The proximate cause of the “storming” phenomenon was the temporal disjunction between inputs required and inputs supplied.<sup>6</sup> This temporal discoordination, in turn, can be attributed to the dispersion of knowledge. The central “planning” authorities lacked the detailed knowledge needed to properly coordinate production.

Planning documents that were supposed to guide a given period of production were frequently completed well after the beginning of that period. And typically they were revised later on, to resemble what was actually being done. Apparently, it is not the planning documents that guided production; instead, whatever happened is what guided the planning documents. The theoretically socialized enterprises can therefore be viewed as the de facto personal property of their managers, and of certain high government officials who had power over them.<sup>7</sup> Formal and informal agreements were made between these de facto owners, with and without the assistance of the planning apparatus. Intermediate goods were transferred to and traded in gray markets.<sup>8</sup> Without the enterprising initiative of the de facto owners and the complex web of informal agreements and gray markets, socialist production may have been paralyzed.

Real-world socialism may be best described not as central planning, but as a system of attenuated personal property and of polycentric production decisions—but guided by feedback and other information that is much inferior to the prices generated in a market economy. A polycentric production system can use dispersed information not accessible by a centralized command system; but without competition for the means of production, the system's input prices cannot adequately reflect their relative scarcity.<sup>9</sup> Actual socialist societies' formal and informal arrangements, however, did provide some degree of competition for the means of production. This restricted competition may have substantially reduced the waste of resources that otherwise would have taken place. If so, then the polycentricity of actual socialist societies was a defense against the chaos that Mises predicted would follow from pure socialism.

If Mises is correct about the impracticability of isolated socialism, then to avoid or postpone the Misesian catastrophe, a socialist state must either adopt a polycentric system of production, or else parasitically derive sufficient information from an outside, capitalist economy.<sup>10</sup> The historical record of both the Soviet and the Cuban regimes are compatible with the former scenario. The polycentricity of actual socialist systems may be no accident of history.

With the exception of writers such as Boettke (2001), Austrians have paid scant attention to the polycentricity of actual socialist societies. And they have not cast much light on the issue of how centralized production decisions must be if an economy is to be considered close enough to the central-command model to produce economic disaster. In fact, some Misesians (e.g. Rothbard 1962, 831) have confused the issue by suggesting that the presence of black markets for consumer goods is a significant departure from socialism.<sup>11</sup> Much research is needed if we are to make a reasonable judgment about the extent that polycentricity extended the life of socialist societies.

### *The Magnitude of Isolation*

Misesians have given greater attention to the fact that real-world socialism—unlike Mises's isolated socialist state—had access to knowledge generated by a capitalist world. Misesians see in this fact the basic explanation for the duration of twentieth-century “socialist” societies.

While such societies borrowed technological and organizational ideas

from capitalist societies,<sup>12</sup> Misesians have emphasized the borrowing of input and output prices generated by capitalist markets. Murray Rothbard (1962, 831), for example, wrote that

a single socialist country or bloc of countries, while inevitably experiencing enormous difficulties and wastes in planning, can still buy and sell and refer to the world market and can therefore at least vaguely approximate some sort of rational pricing of producer goods by extrapolating from the market. The well-known wastes and errors of this partial socialist planning are negligible compared to what would be experienced under the total calculational chaos of a world socialist state.

For example, Cuban planners abandoned their ambitious industrialization plan for the 1960s when they realized that many of the plants they had built consumed more in inputs, when priced in line with the world market, than the value of the outputs. More recently, Cuba's 2002 decision to close 71 of its 156 sugar mills, temporarily increasing unemployment by approximately 100,000, was also based on world-market price observations.

Caplan dismisses the benefits derived from being able to learn from capitalist economies by pointing out that socialist regimes sometimes deliberately disregarded known capitalist data on economies of scale to pursue propaganda objectives. But such instances of willfulness do not refute the fact that many socialist regimes deliberately used—because they needed to use—capitalist prices. The use of capitalist prices by socialist “planners” has been noticed in mainstream economic literature on comparative systems since at least the late 1950s.<sup>13</sup>

Since capitalist market prices reflect the relative scarcity of the means of production in the capitalist part of the world, the usefulness of capitalist prices to socialism depends on how much of the world has been socialized. An almost complete socialist world state, guiding its production by the prices of a remaining capitalist Luxembourg, is an absurd fantasy. If the Misesian perspective on the dependency of socialism on capitalist prices is correct, then the socialist state of “total calculational chaos” should arrive well before the last act of capitalist trade. This suggests that the more extensive the socialization of the world means of production, the lower the factor productivity of socialism should tend to be.<sup>14</sup>

*Do Incentive Problems Explain the  
Magnitude of Socialist Failure?*

Contrary to Caplan, real-world socialist economies' poor economic performance cannot be explained by a failure to mobilize labor. Most of these economies were quite successful at inducing people to work. Their wage systems taxed earnings at high implicit average rates but low implicit marginal rates.<sup>15</sup> So the income and substitution effects both worked to increase the amount of labor time. By contrast, in the progressive tax systems of developed capitalist economies, substitution-effect incentives work in the "wrong" direction. Socialist regimes also rewarded natural talent and acquired skills with higher basic pay.<sup>16</sup> And they used combinations of bonuses, prizes, special perquisites, and progressive piece-rate compensation to elicit labor effort.<sup>17</sup> If the problem with socialism had been insufficient material incentives to supply labor, then the still-relatively prosperous European social democracies should have been even worse off than Eastern Europe.

It is worth mentioning that poor socialist economic performance also can't be attributed to high consumption rates. Most socialist societies invested heavily in both physical and human capital, so their consumption rates were substantially lower than those of most capitalist nations (Denizer and Wolf 2000). Some socialist countries turned out engineers, scientists, and physicians as fast as the United States produces lawyers.

There was no failure, then, in providing either human or other resources to the systems of production in socialist societies. The problem was the misuse of those resources. Many of the development projects of socialist societies can best be described as economic value-shredding machines.<sup>18</sup> Polycentric socialist societies' extraordinary misuse of resources, *despite* the availability of knowledge derived from capitalist economies' capital-goods prices, is probative evidence for Mises's impracticability-of-socialism conjecture. The misuse of resources would likely have been far greater, possibly enormously greater—as in the case of early Soviet socialism, or "War Communism" (see Appendix)—in an isolated, centralized command system: the ideal type of pure socialism, or communism.

Economic theory, assisted by experience, tells us that a system of production without the guidance of market prices is a recipe for gargantuan waste, instead of for an appealing alternative to capitalism. The

evidence from twentieth-century socialist societies speaks loudly against the idea that a calculationless socialist world state could be sustained even by enormously high labor effort and investment rates.

A socialist world state sustaining an advanced civilization is not *logically* “impossible.” That much we grant to Caplan. It seems to us, however, no more possible in the real world—in light of historical experience—than it would be for a vehicle without a steering mechanism to win the Monaco Grand Prix.

#### APPENDIX: CAPLAN’S VERSION OF SOCIALIST ECONOMIC HISTORY

As evidence against Mises, Caplan offers an interpretation of the economic history of socialism in which calculational problems did not seriously affect socialism, and incentive problems account for practically all socialist economic missteps. But Caplan’s interpretation of socialist economies’ historical record should not be accepted as an impartial, reasonably sound, empirical analysis. His historical research is highly selective—as Boettke and Leeson argue—and relentlessly guided by a preconceived idea to the point of being deeply flawed.

A core weakness of Caplan’s historical analysis is its conceptual vagueness. Caplan sees “massive evidence” of incentive problems, and only “spotty” signs of calculational problems. But he never says what those “spotty” signs were. More troubling is that Caplan gives us not a hint of what he would see as signs—whether spotty or robust—of calculational problems. This is important because calculational ignorance, and resulting economic difficulties, are not directly observable to those outside the socialist decision-making process. Thus, Caplan has no evident criteria for separating incentive-caused outcomes from calculation-caused outcomes.

That is a fundamental (and in our view fatal) flaw in Caplan’s historical analysis, because inadequate incentives often are the inevitable *result* of calculational ignorance. It can be the case that incentives are defective, even counterproductive, while the true cause of the bad outcomes is the inability to make economic calculations.

If incentives are defective because of ideological constraints or because those at the top don’t care what the results are, then the poor results one observes truly are an incentive problem. But if incentives are not adequate because it is impossible or prohibitively costly for the so-

cialist planners to acquire the knowledge needed to design adequate incentives, then the true cause of the bad results is cognitive, not motivational.

In real-world socialist countries, plant managers' rewards were frequently based on some physical measure (number of units, square meters, weight, etc.) of the plant output. This, of course, can have terrible effects on the usefulness of the product's characteristics and on its quality; consider a glass factory that produces very thin and therefore too-fragile glass because the reward is based on squared meters produced.

One might, however, move the "incentives" analysis back a step and hypothesize that the real problem is that the planners had no incentive to structure their subordinates' incentives better. Otherwise, why wouldn't the planners base the rewards on a factory's profits?

One reason is that the arbitrary accounting "profits" of a socialist enterprise are not a substitute for profits generated by subtracting costs from income when the latter numbers are, in turn, produced by a capitalist price system. The problem, in this case, is that the people at the top have no reliable value measure of the gain or loss generated by the plant. That is a knowledge problem, or rather an ignorance problem—even though it is a problem of ignorance of the right incentives to give the planners' subordinates.

Socialist rulers easily could have observed some of the deficiencies of socialist production. The very evidence Caplan cites, for example, comes from secondary sources reporting the testimony of people on the scene who were astounded by the stupidity of the system's operation—for example, the obviously inappropriate characteristics and low quality of socialist industrial plants' outputs. Why didn't they correct these easily observable, and frequently observed, deficiencies? One possibility is that perceiving bad results is not the same as knowing how to achieve better results.

Caplan's alternative view, that socialist rulers didn't care about the results they achieved, is the key to understanding his idiosyncratic historical analysis. Occasionally he does describe socialism's incentive problem in the conventional way, as one of insufficient material incentives for the labor force. But his primary explanation is the assumption that socialist leaders were not interested in better economic results because they had no incentive to be.

We have not challenged Caplan's commonplace assumption that everyone is motivated by self-interest, but even granting that, why wouldn't socialist leaders also prefer, *ceteris paribus*, to rule over more

economically productive societies? How would taking simple steps to improve the economy *harm* their self-interest—if the steps were indeed simple (which is the hidden premise, once Caplan assumes away the economic complexity that demands a calculational solution)?

Caplan's view isn't even consistent with that of mainstream public-choice theory, which shares his assumption of universal self-interest. A large body of public-choice literature is based on the reasonable assumption that a "stationary bandit" (whether his name is Stalin or Louis XIV) has a considerable stake in the productivity of the population in his territory.

Caplan simply asserts that when the socialist leaders "genuinely care" about the results, they (somehow—but how?) know, hence implement, the right incentives; then things get done right. As sole evidence for this extraordinary claim, he offers the Soviet defense sector! We are reminded of one of Ronald Coase's aphorisms: "If you torture the facts enough, history will always confess."

In reality, it is as if the intended role of the Soviet defense sector was to contribute to the collapse of the system. But if the purpose of its vast expenditures on conventional military forces was actually to provide an effective counter to NATO military power, then it is doubtful that Soviet military decisions were any better than Soviet decisions about construction or energy production. Apart from the land-based nuclear force that threatened the West, what else was cost effective or even made much military sense in the post-1970 forces?<sup>19</sup>

Caplan's view notwithstanding, Soviet military decisions were not at all analogous to a discerning consumer's decisions in a market economy. The Soviet military had a gargantuan appetite for large quantities of equipment, and that appetite was fed. This may be reminiscent of the military establishments of the West, but the types of equipment consumed by the Warsaw Pact were heavily shaped by what "socialist" industry found convenient to produce. The absurdities of the Soviet military supply system were far more elementary and of greater magnitude than those of the United States and its principal NATO allies.

Soviet industry provided the military with a substantial amount of vintage equipment that was of too negligible use to be justified by its lower cost of production. For some missions, the military was supplied with vastly redundant quantities of equipment, and for other missions, the military was grossly undersupplied. There was also an absurd variety of aircraft, tanks, surface-to-air defense weapons, and the like (not explainable, as in the West, by national sovereignty and democratic pork-



barrel politics). This generated unmet needs for spare parts and support personnel. At the same time, too little attention was given to the training of pilots, soldiers, and support personnel. This resulted in ratios of human capital to equipment that seem to be much lower than optimal. There is a reason that beginning in World War II, Soviet military doctrine was always based on overwhelming quantity rather than effective quality.

A few snapshots can help convey the reality behind the fearsome facade of the Soviet military. The Soviet Air Force used a delightful assortment of aircraft designs for the same mission. For example, there were seven models of fighter planes (the Mig-23, Mig-25, Mig-27, Mig-29, Mig-31, Su-27, and Yak-38) and four close-ground attack jets (the Mig-23D, Su-24, Su-17, and Su-25) by the late 1980s. In comparison, the U.S. Air Force used two fighters (the F-15 and F-16) and one attack plane (the A-10).<sup>20</sup> The training of Soviet pilots was substantially below U.S. standard. For example, Soviet pilots were not trained to recover from out-of-control flights, making them wary of trying to maximize aircraft performance.

The Soviet army, similarly, looked impressive on paper: a great number of men and weapons, especially tanks. But the vast majority of the soldiers and officers were poorly trained. The reality behind the numbers came across in the Soviet army's paper-tiger performance in Afghanistan. But the prize goes to the Soviet Navy: heavy with blue-water vessels that had no air cover due to the lack of aircraft carriers; overdiversified, top-heavy combat ships; and nuclear-powered submarines that left port without radiation suits.

Caplan's historical analysis is at its best when he discusses the horrible consequences of Soviet agricultural collectivization. Here he has a case where much can be explained by bad incentives. The confiscation of farmers' property and labor is undoubtedly why they slaughtered livestock, reduced effort, and sometimes defied the authority of well-armed soldiers. However, Caplan provides no credible explanation for the disastrous policies at fault. And he fails to notice the connection between the need for violence to extract surplus from the farmers and the state's ignorance of, or inability to use, more effective means of securing the farmers' cooperation.

Caplan argues that before the Bolshevik Revolution, Russian peasants were too backward to be familiar with cost accounting; hence the post-Revolution agricultural crisis could not have been due to the removal of prices. If there was no economic calculation before the col-



lectivization of the land, the aftermath of collectivization cannot be blamed on the absence of calculation under socialism. But this argument is a non sequitur based on a prior non sequitur. It does not follow from peasants being unfamiliar with formal cost accounting that they performed no economic calculation. Without any assistance from balance sheets, peasants around the world figure out what crops it pays to grow, and how much effort to put into taking care of those crops. Tiny farms and other small enterprises need no accounting ledgers, *per se*, to make efficient decisions based on market prices for inputs and outputs. But it is not necessarily true that large state farms can be run efficiently without real market prices. Even if there had been no calculation before collectivization, it does not follow that what happened afterwards is not the fault of calculation problems.

The effect of Caplan's analysis is to treat the deeds of the Soviet regime as if they were the acts of maniacs who didn't care how much wealth their actions destroyed. It took men of monstrous minds to do what was done to millions of Soviet farmers. But monstrous minds can be highly rational, in the sense that they can be trying to solve what they take to be important problems. Arguably the horrendous deeds of the Soviet system were the product of socialist planning at its rational "best" (Olson 1993, 18–20). The decisions of the Soviet regime make a kind of sense—given the regime's objectives and the constraints it faced.

The Soviet leaders seem to have thought what any observer of capitalism, unaware of the Mises-Hayek argument, might easily think: that all it takes to create a modern society is whatever is necessary to build up heavy industry. This naïve view is still widely accepted, even in the West. Moreover, heavy industry was indeed needed to produce the armaments for an eventual confrontation with capitalist regimes. So the leadership did what seemed essential to the development of heavy industry. They (1) expanded, educated, and fed an urban labor force to build and operate industrial plants. And they (2) assisted the home-grown scientific establishment with imported machinery, tools, and other technology from the West.

Initially, the Soviet economy was largely agricultural. The problem facing the would-be industrializers was to divert food and other agricultural products to (1) a growing urban population and to (2) foreign trade. Solving this problem by paying the marginal supply price for agricultural output was incompatible with the leadership's industrialization objective. The goal was to invest in heavy industry, not to produce

consumption goods for the rural population. So the plan called for extracting as much economic surplus from the rural population as feasible, using what probably were the most effective methods the leadership had.

Collective farms were responsible for delivering high output quotas, set by the state, at (artificially) low prices. As Mancur Olson (1993, 20) put it, the collective farm "was designed to be 'collective' in the sense of collection, not as in 'collectivist.'" It was socialism's slave plantation. After many hours of labor on the collective farm, agricultural workers were then allowed to work their little private plots. The more they produced on these little plots, the lower the prices the state could set for the outputs of the collective farm.

A socialist state that could accurately estimate the productive capacity of the farmers, and the farmers' valuation of goods and leisure, would have no need to act as the Soviet state initially did. The hypothetical socialist state would be capable of extracting most of the agricultural surplus, via refined wage and price discrimination, without generating the extensive deadweight loss of property and lives that Caplan describes so well. It would be far less destructive and far more efficient.

One should not expect to run into direct, crystal-clear evidence of socialist societies' calculational problems. Those outside the socialist decision-making system are obviously not in a position to directly observe the insiders' calculational ignorance. And much is hidden from insiders' eyes as well. Calculational errors can take place without anyone, outside or inside the socialist system, knowing what the correct alternative was, or even that a calculation error was made. To know for certain that a calculation problem led to an incorrect decision, one must be able to calculate the opportunity cost of resource use. And that is precisely what centralized control of the means of production makes it impossible to do.

Consider, for the sake of simplicity, a socialist planner who chooses one of two available ways to produce a given quantity of some product. *Ex hypothesi*, the two techniques differ only in that one uses (per unit of output) 1 more ounce of steel and, 1 less of aluminum, than the other. Without knowing the value of steel and of aluminum in possible alternative uses, no one can determine after the fact whether the right technique was chosen. The presence of calculational problems usually must be inferred, as with the causes of most phenomena in a complex social world.

In some cases, however, the evidence of calculational problems is

more directly observable. Sometimes socialist leaders and top administrators were perceptive and candid about the calculational difficulties they encountered.

The famous mid-1960s debate among Cuban leaders about central planning and state-enterprise autonomy clearly reflected the calculational difficulties encountered by Cuban planners. Even Che Guevara, the leader of the faction that favored a highly centralized decision-making system, had to admit that the top hierarchy had neither the necessary data nor the analytical capacity to formulate and implement a consistent plan (Bernardo 1967; Silverman 1971). Likewise, during and after their failed attempts to establish a centralized command economy, Lenin and other Bolshevik leaders under War Communism admitted they had greatly underestimated the impediments to socialist calculation, and that they lacked the capacity to run an economy without markets (Roberts 1990). In May 1918, Lenin (1960–68, vol. 27, 334) wrote in *Pravda* that “confiscation can be carried out by determination alone, without the ability to calculate and distribute properly, whereas socialization cannot be brought about without this ability.” In March 1921, after War Communism had failed disastrously, Lenin argued that commodity production (i.e., production guided by markets), despite being evil, must somehow be reconciled with socialism (ibid., vol. 32, 218–20).<sup>21</sup> And in October 1921, he wrote in *Pravda*: “We expected—or perhaps it would be truer to say that we presumed without having given it adequate consideration—to be able to organize state production and state distribution of products on communist lines. . . . Experience has proved that we were wrong” (Lenin 1960–68, vol. 33, 58).<sup>22</sup>

Socialist attempts to establish a centralized command economy have been few and brief. Why? For Boettke (1990) and other Austrian-school economists, the answer is that an attempt to run an economy from the top generates severe calculational disorder, and this forces the socialist leaders to retreat. The magnitude of the failure serves to discourage future attempts. The historical evidence is compatible with this answer. The result of War Communism was truly catastrophic, just as Mises predicted for a case of nearly pure socialism (see Boettke 1990, 88–89, on the scope of the disaster). The Soviet leaders gave up on central planning, replacing it with a polycentric system of production.

Thus ended the one serious attempt to establish a pure command system anywhere, until the Cuban revolution. The result of the attempt to run the Cuban economy from the top was another economic disaster. Cuban leaders did not react to this disaster by providing greater ma-

terial incentives. Instead, they, too, abandoned the command-economy dream, and converted to polycentric socialism.

Similarly: why did Soviet-bloc economies use capitalist market prices for intra-bloc trade, for evaluating development projects, etc.? The Austrian-school answer is that socialist societies used capitalist prices to alleviate their calculational ignorance. Caplan does not offer any alternative explanation for this bout of sanity among what, in his view, seem to be economic madmen.

Calculation ignorance leads to calculational errors, and calculational errors would be reflected in inferior returns to investment. The low rate of return to socialist societies' investment in physical and human capital (Green et al. 2002; Madrid-Aris 2000) is thus more evidence for the Austrian position.

With a little digging, therefore, one can find in the historical record of real-world socialist societies numerous signs of calculational problems. And without pretending to unobtainable quantitative precision, these problems strike us as having a high order of magnitude, just as Mises conjectured that they would.

#### NOTES

1. See the final paragraph of "Economic Calculation in a Socialist Commonwealth" ([1920] 1990, 50). It would take a great leap, however, to infer from his earlier writings that the younger Mises was merely challenging the "coherence" of a particular socialist project, in Boettke and Leeson's sense (2005). He wrote in *Socialism* ([1922] 1981, 118) that "the attempt to reform the world socialistically might destroy civilization. It would never set up a successful socialist community."
2. Part of the necessary knowledge is the vastly dispersed information on how to produce. This is the problem Hayek emphasized. Mises, however, pressed a different point: even if that information could be obtained, the state would need to know what to do with it. The raw data must be transformed into knowledge of how to rationally employ the means of production. This is a different problem than finding the equilibrium solution of a system of equations. See Salerno 1993 and 1994.
3. One may wonder why salaries varied so much under cases of existing socialism. This may be explained in a couple of ways. Roberts (1990) maintains that "socialist" states abandoned their socialist ideals early on, so they were really polycentric, not centrally controlled. In addition, they were able to observe and imitate wages paid in the capitalist world.
4. In Mises's eyes, syndicalism, and similar arrangements that forbid or restrict individual ownership of the factors of production, are inefficient; but they

don't count as "socialist," because they are not centralized command systems (Mises [1949] 1966, ch. 33).

5. Consider a Crusoe who must spend years drawing with his fingers symbols in the sand to complete an homage to a god.
6. Paying overtime wages is not a solution to the problem and could aggravate the timing deficiency of the system.
7. The fact that a king claims to be the owner of all the land in a territory does not alter the fact that most of the land is controlled by nobles on whose support the king's crown rests.
8. Gray markets are exchange relationships that, while not legally approved, are openly tolerated. In contrast, a black market exists in spite of government efforts to suppress it.
9. So even if the polycentric production decisions of a "socialist" society were successfully coordinated by the central "planning" agency, that would not be enough to make proper use of the means of production.
10. For simplicity, we ignore the possibility that the new socialist state could operate for a while guided by the memory of prices, etc., from a capitalist past.
11. Mises's calculation problem applies to any scenario in which the production decisions are made by one agency. Trade in consumer goods produced by the state, whether legal or illegal, is compatible with Mises's definition of socialism.
12. For a picture of the extent to which the Soviet Union borrowed Western technology, see Sutton 1973.
13. When Peter Wiles (1957) asked Polish planners what they would do if there were no capitalist world from which to obtain the prices that guided the intra-Soviet bloc trade, their glib answer was: "We'll cross that bridge when we come to it." See also Menderhausen 1960 and Kaser 1965.
14. This suggests the possibility that the collapse of the Soviet bloc may have helped to raise the productivity of the surviving socialist countries. After the shock from the loss of massive Soviet aid, Cuba's total factor productivity growth (1994–1998) appears to have been higher than it was beforehand (i.e., in 1970–1988, when it experienced negative TPF growth), when it was a substantially integrated member of the Soviet bloc (Hernandez-Cata 2002; Madrid-Aris 1997).
15. An example of this would be if a government required everyone to supply the state 40 hours of unpaid labor per week and then let workers keep the full product of any work they did beyond 40 hours. Here the average tax rate is high but the marginal tax rate is zero, both of which will induce workers to work more than they would in other systems. For a more detailed description of the Soviet wage system, and how Stalin used it to induce a remarkable increase in labor time and effort, see Olson 1995 and 2000.
16. Socialist countries, including Cuba, used differences in basic pay to match labor demands with the distribution of skills. The wage structure of socialist Cuba in the 1960s—when it had a far more egalitarian economy than it does now—exhibited a ratio between higher- and lower-paid job occupations of 14:1 (Mesa Lago, 1968).

17. Socialist countries have also mobilized labor by force, and by social pressure to do voluntary unpaid work. The ugly story of Soviet slave labor is well known. Socialist Cuba relied substantially on voluntary labor, particularly in the 1960s (Bernardo 1971).
18. See, for example, Dumont 1974's description of the misguided and mismanaged agricultural development projects of Cuba in the 1960s.
19. In the pre-1970 postwar period, there was greater consistency between the mission and the means of Soviet conventional forces. The Navy's surface fleet, at that time, was mainly a coastal-waters defense force that could count on air cover from land bases. Most of the Soviet combat planes were well suited for defensive air combat against NATO tactical aircraft: the Mig-15 was a worthy rival to the F-86 (then the best fighter plane) in the Korean War, and Soviet fighters (the Mig-17 and the Mig-21) were fairly effective against U.S. fighter-bombers in Vietnam. The Soviet army could also credibly threaten a land war in Western Europe by sending wave after wave of armored divisions to the front—possibly overwhelming NATO conventional forces, leaving the West with the sole military alternative of turning Western Europe into a nuclear battleground.  

The military value of Soviet armored divisions, however, dramatically declined after 1970, as improvements in military technology gave NATO forces more advanced all-weather combat planes, better attack helicopters, and more precise bombs and missiles. The improvement in NATO weapons rendered Soviet combat doctrine in Western Europe absurd: most Warsaw Pact tanks, mechanized infantry vehicles, and logistical support would have been cut to pieces before reaching the front.
20. This comparison does not count, for either side, old planes used exclusively by reserve forces.
21. This is quite a concession to reality, since commodity production is, for Marx, the essence of what is wrong with capitalism. See Roberts and Stephenson 1973.
22. None of these Soviet leaders, however, came close to a clear formulation of the calculation problem. Toward the end of the War-Communism period, a Russian economist, Boris Brutzkus, did formulate the problem almost as clearly as Mises had in his early writings on socialism. Soviet toleration of Brutzkus's views was short lived; he was deported in the summer of 1922.

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